

all cont. apparatus. Preferred systems of the invention include a localization module, integrated with a medical instrument, that allows for localization of the effector in targeted image space using a single cross-sectional image.

Page 3, rewrite the paragraph starting at line 19, to read as follows:

a2 It thus would be desirable to have improved methods and systems to determine the location of an end effector delivery system and the location of an effector such as a needle, probe, etc. within a body. It would be further desirable to have such a position and orientation system that could be employed in minimally invasive surgical procedures without need for external reference frames, surgically implanted fiducial markers or calibration procedures.

Page 8, rewrite the paragraph starting at line 15, to read as follows:

a3 As discussed above, a registration system is provided for determining the three-dimensional position and orientation of an effector such as a needle, probe, etc. relative to a subject using one or more cross sectional images of the subject. The image registration system suitably comprises a scanning device such as a CT, MRI or the like, and a fiducial object (i.e. that can be detected by the imaging apparatus) associated with a surgical instrument. Systems and methods of the invention enable effector placement without use of patient immobilization or separate fiducial implantation.

Page 11, rewrite the paragraph starting at line 7, to read as follows:

a4 A schematic illustration of one fiducial motif 214 intersected by an image plane 115 is